Claims

1. A valve assembly for regulating the flow of hydrogen gas in a metal hydride hydrogen storage system, said valve assembly comprising:

a housing having one or more entrance ports through which fluid enters said valve assembly and one or more exit ports through which fluid exits said valve assembly, said one or more entrance ports and said on or more exit ports being in fluid communication via a chamber extending from said one or more entrance ports to said one or more exit ports within said housing;

a plug disposed within said chamber in a normally open position; and

a translating member in mechanical communication with said plug, said translating member biasing said plug in the direction of said one or more entrance ports;

said plug and said translating member cooperating to provide a flow resistance actuated by the force exerted on said plug in the direction of said one or more exit ports by fluid entering said valve assembly such that said flow resistance increases with increased force exerted on said plug.

2. The valve assembly according to claim 1, wherein said plug comprises one or more fluid flow channels longitudinally disposed within said plug.

3. The valve assembly according to claim 1, wherein one or more of said one or more exit ports receive at least a portion of said plug upon force being applied on said plug in the direction of said one or more exit ports by fluid entering said one or more entrance ports.

4. The valve assembly according to claim 1, wherein said translating member is a spring.

5. A metal hydride hydrogen storage system comprising:

a source of gaseous hydrogen;

a pressure containment vessel at least partially filled with a hydrogen storage alloy;

a pressure regulating valve providing gaseous communication between said source of gaseous hydrogen and said pressure containment vessel, said pressure regulating valve including:

a housing having one or more entrance ports through which hydrogen enters said valve assembly and one or more exit ports through which hydrogen exits said valve assembly, said one or more entrance ports and said one or more exit ports being in gaseous communication via a chamber extending from said one or more entrance ports to said one or more exit ports within said housing;

a plug disposed within said chamber in a normally open position; and

a translating member in mechanical communication with said plug, said translating member biasing said plug in the direction of said one or more entrance ports;

said plug and said translating member cooperating to provide a flow resistance actuated by the force exerted on said plug in the direction of said one or more exit ports by hydrogen entering said valve assembly such that said flow resistance increases with increased force exerted on said plug.

6. The hydrogen storage system according to claim 5, wherein said one or more exit ports receive at least a portion of said plug upon force being applied on said plug in the direction of said one or more exit ports by fluid entering said one or more entrance ports.

7. The hydrogen storage system according to claim 5, wherein said plug comprises one or more fluid flow channels longitudinally disposed within said plug.

8. The hydrogen storage system according to claim 5, wherein said translating member is a spring.

9. The hydrogen storage system according to claim 5, wherein said hydrogen storage alloy is selected from Rare-earth metal

alloys, Misch metal based alloys, zirconium based alloys, titanium based alloys, magnesium based alloys, magnesium/nickel based alloys, tantalum based alloys, tungsten based alloys, and mixtures thereof.